

Herpes Simplex Virus

For CEU Credits

Upon the completion of this program, be sure to fill out your evaluation and fax your

IF to Janice Davis 513-357-7306



Cincinnati STD/HIV Prevention Training
Center

Herpes Simplex Virus

Genital Infections Virology, Pathogenesis and Epidemiology

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Herpes Simplex Virus

Introduction

- ◆ Nature of infectious agents
- ◆ Host responses to infection
- ◆ Variation in host susceptibility
- ◆ Variations in microbial virulence

Herpes Simplex Virus

Kinds of Viruses

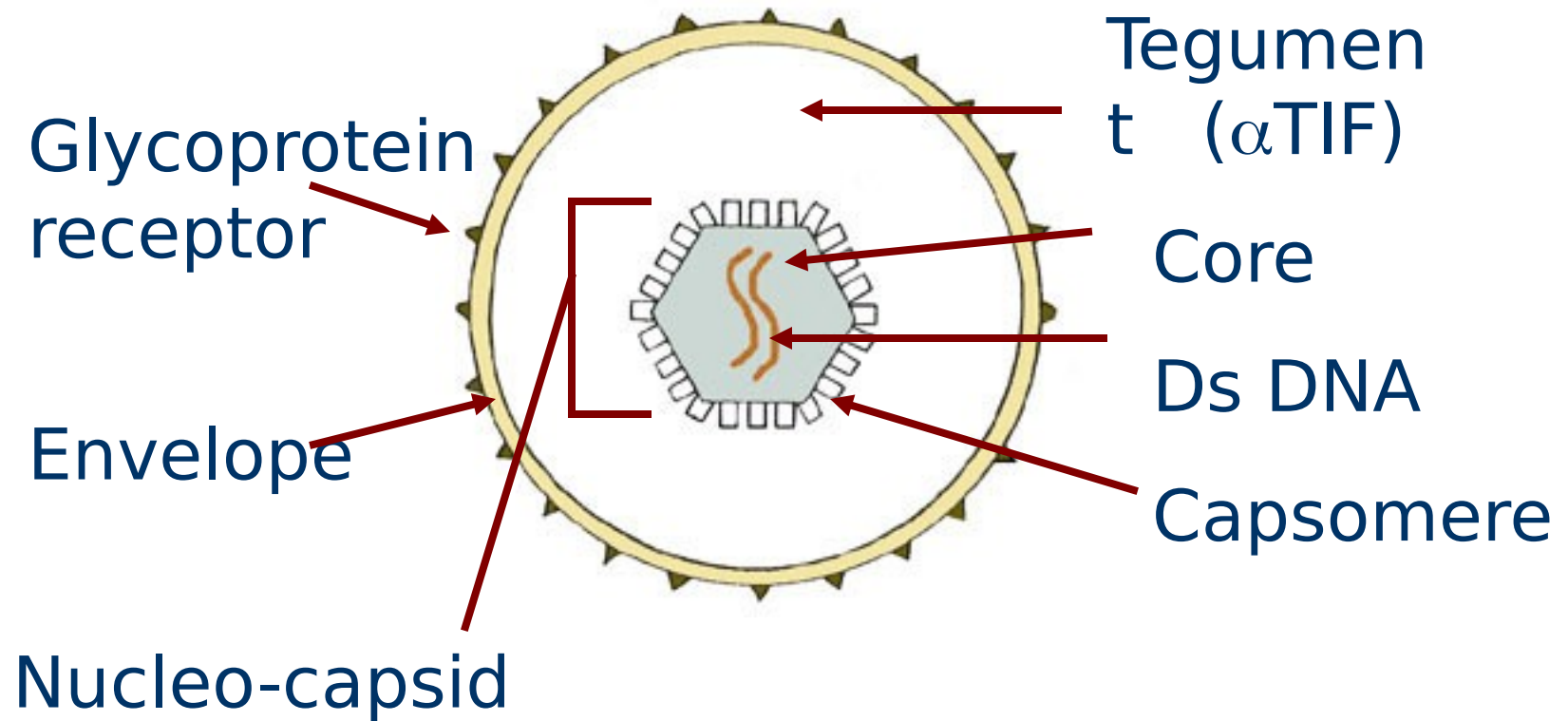
- RNA viruses
- DNA viruses
- “Naked” viruses
- Enveloped viruses

Herpes Simplex Virus

The Herpes Virus Group

- ◆ HSV-1; HSV-2
- ◆ Varicella Zoster virus (VZV)
- ◆ Cytomegalo virus (CMV)
- ◆ Epstein-Barr virus (EBV)
- ◆ HSV-6, 7
- ◆ HSV-8 (KSV)
- ◆ Herpes viruses of lower animals

Herpes Simplex Virus Gross Anatomy



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Herpes Simplex Virus Replication

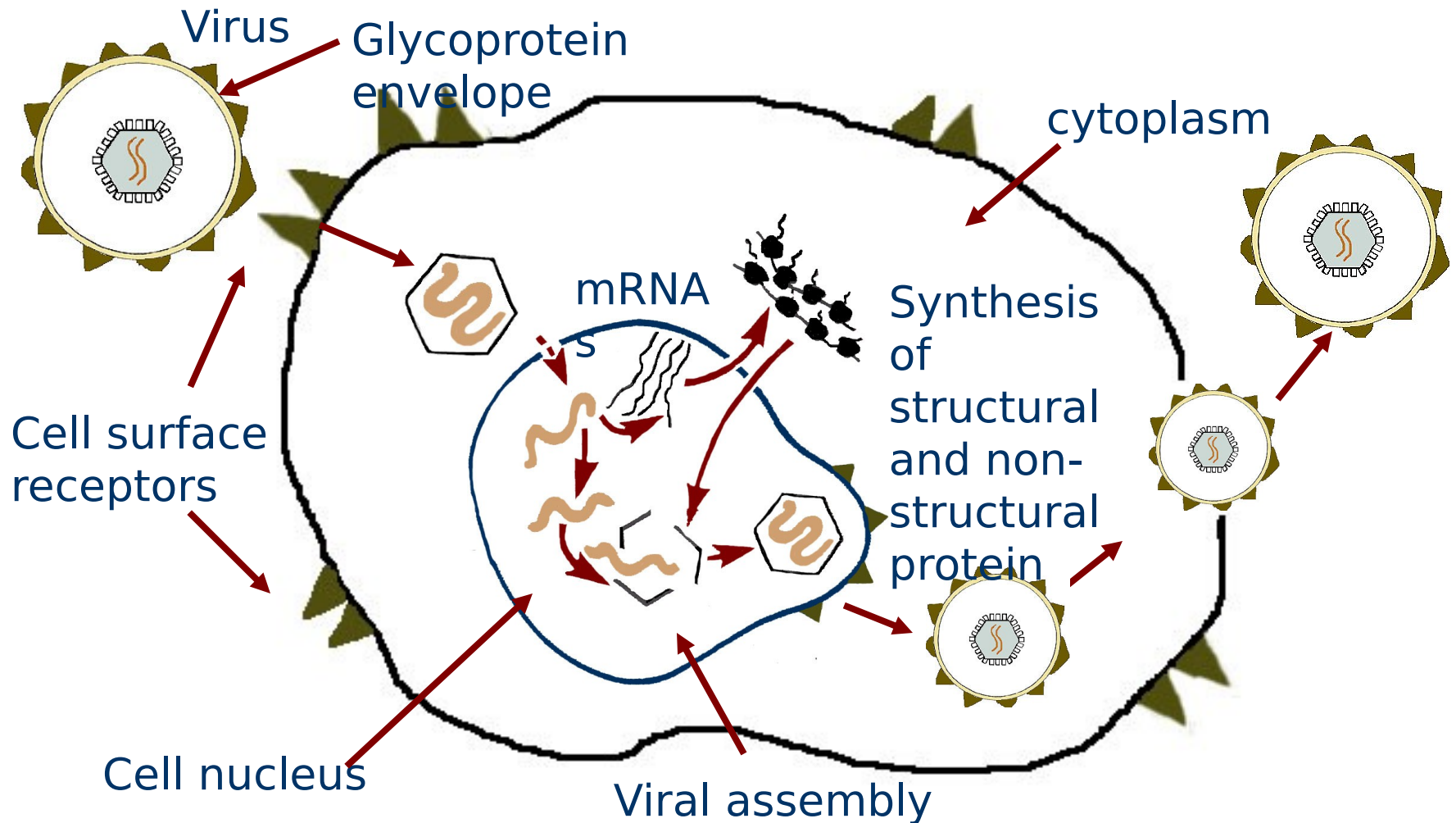
Attachment to Host Cell

- ◆ Requires complimentary cell receptor
- ◆ Indicates virus entry into cell
- ◆ Blocked by specific antibody

Herpes Simplex Virus Replication

- ◆ Entry of capsid into cell
- ◆ DNA deposited into nucleus
- ◆ Synthesis of viral DNA and proteins
- ◆ Assembly of virus component
- ◆ Virus exits from cell

Summary of HSV Replication



Genital Herpes

Primary Infection

- ◆ *Constitutional symptoms*
- ◆ Lymphadenopathy
- ◆ Vesicular eruption
- ◆ Painful multiple lesions

Genital Herpes

Primary Infection

- ◆ Protracted virus shedding (ca. 14 days)
- ◆ Protracted healing
- ◆ ***NO prodromal symptoms***

Genital Herpes

Recurrent Infection

- ◆ *Prodromal symptoms*
- ◆ No constitutional symptoms
- ◆ Lesions heal faster
- ◆ Virus shedding period shorter (ca. 10 days)

Genital Herpes

Recurrent Infection

- ◆ No lymphadenopathy
- ◆ *Provocative factors*
- ◆ *May occur independent of sexual contact*

Genital Herpes

Affected Tissues

- ◆ *Mucous membranes*
- ◆ Skin
- ◆ Cornea
- ◆ CNS
- ◆ Systemic infections of immuno-compromized individuals and newborns

Genital Herpes in Male



Herpes Labialis



Recurrent Herpes Pustular



Recurrent Herpes Pustular

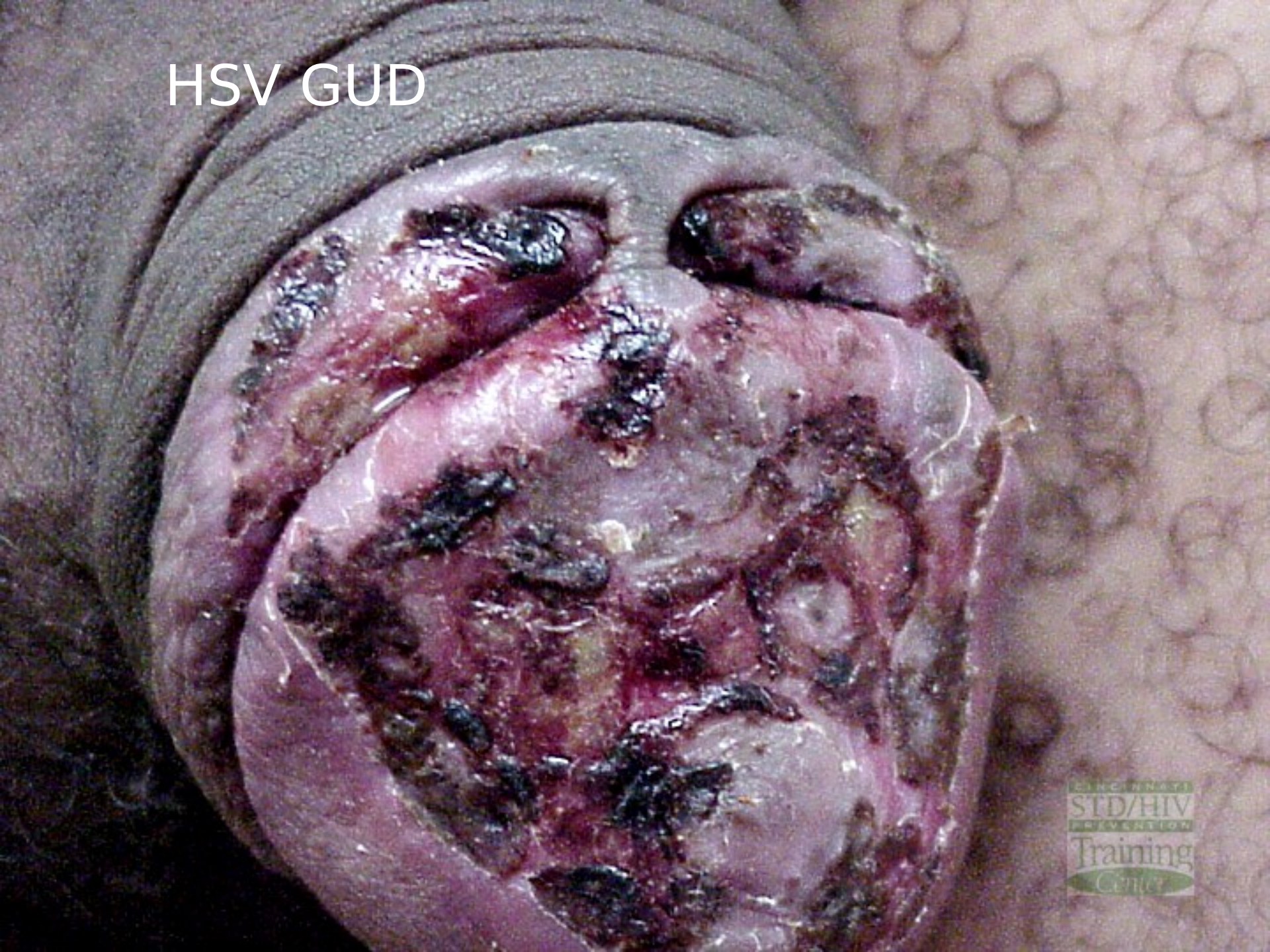


Herpes Genitalis



Herpes Simplex

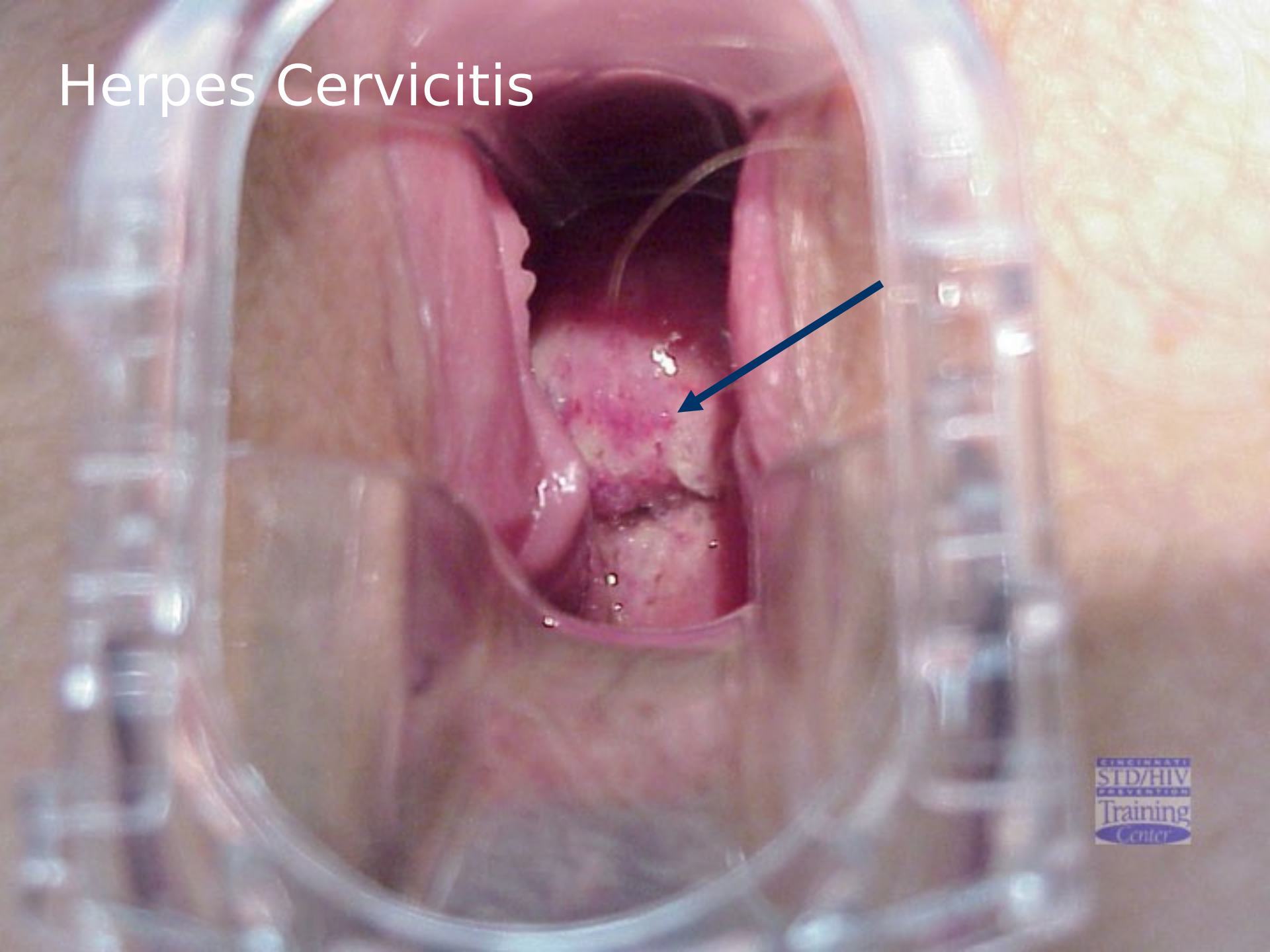
HSV GUD



Herpes Genitalis



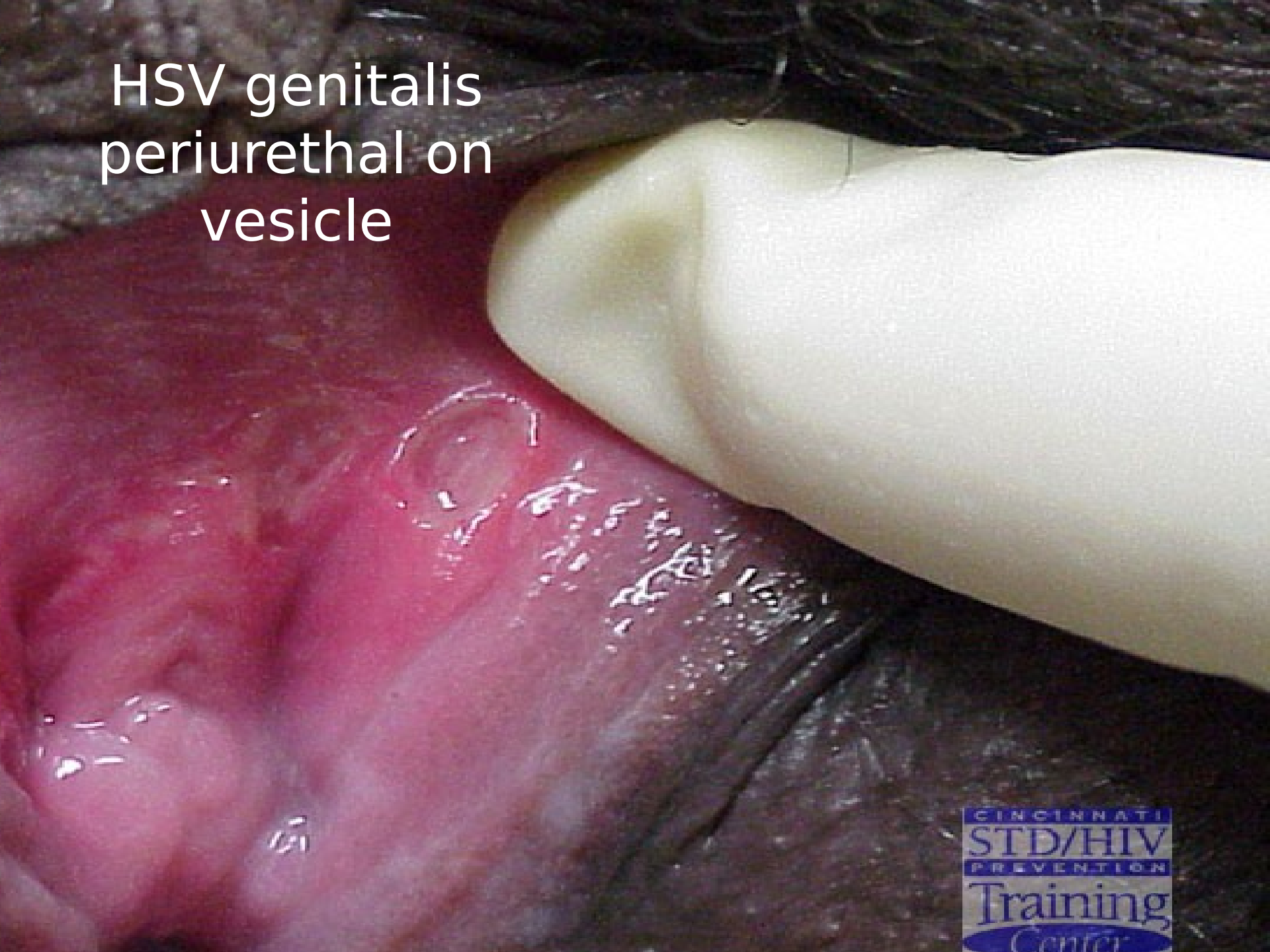
Herpes Cervicitis



Herpes Penile vesicles



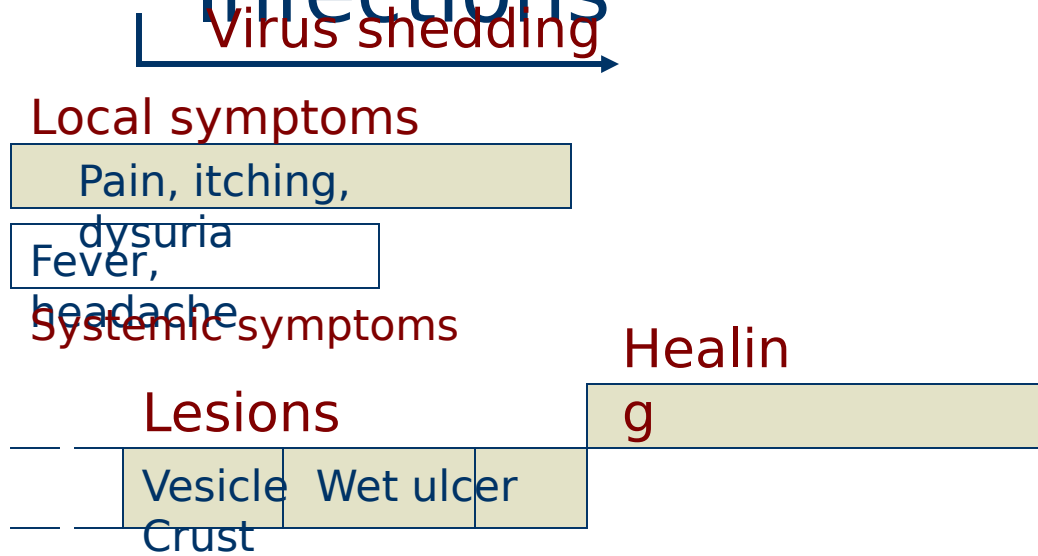
HSV genitalis
periurethral on
vesicle



Summary of HSV Genital Infections

Primary Disease

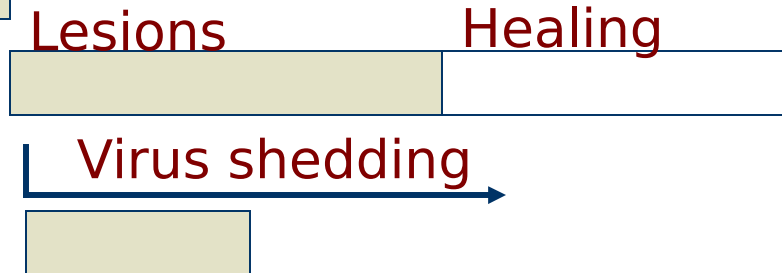
Sexual contact



Days	5	0	5	10	15	20	25
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Recurrent Disease

Prodrome



HSV Latency & Recurrent Disease

- ◆ High frequency
- ◆ *May follow silent infection*
- ◆ No cure available
- ◆ Epidemiologically significant

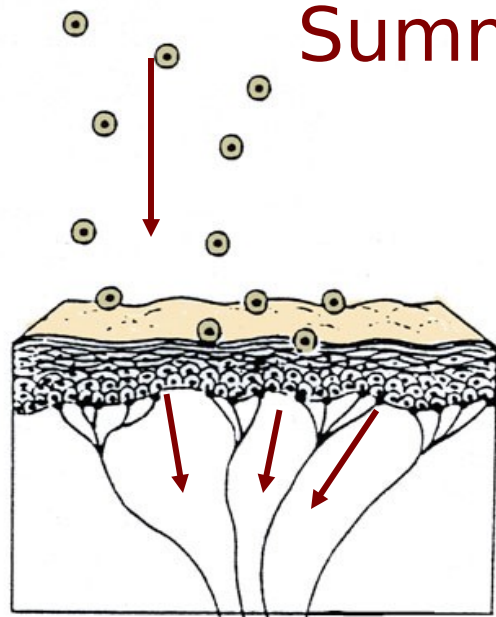
Mechanism of HSV Latency

- ◆ Nucleocapsid migrates to regional ganglionic cell
- ◆ DNA enters neuronal cell nucleus
- ◆ Expression of DNA inhibited

Mechanism of HSV Latency

- ◆ Host cell factors (?) activate virus replication program
- ◆ Infectious virus migrates to mucous membranes via axon
- ◆ Virus replicates in mucosal cells causing recurrent disease

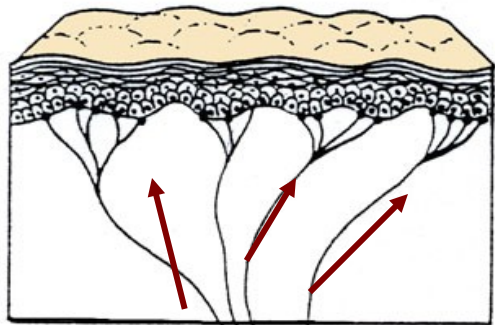
Summary: Mechanism of Latency & Reactivation



A. Penetration into skin. Local replication and entry of virus into cutaneous neurons



B. Centripetal migration in the axon of uncoated nucleocapsids

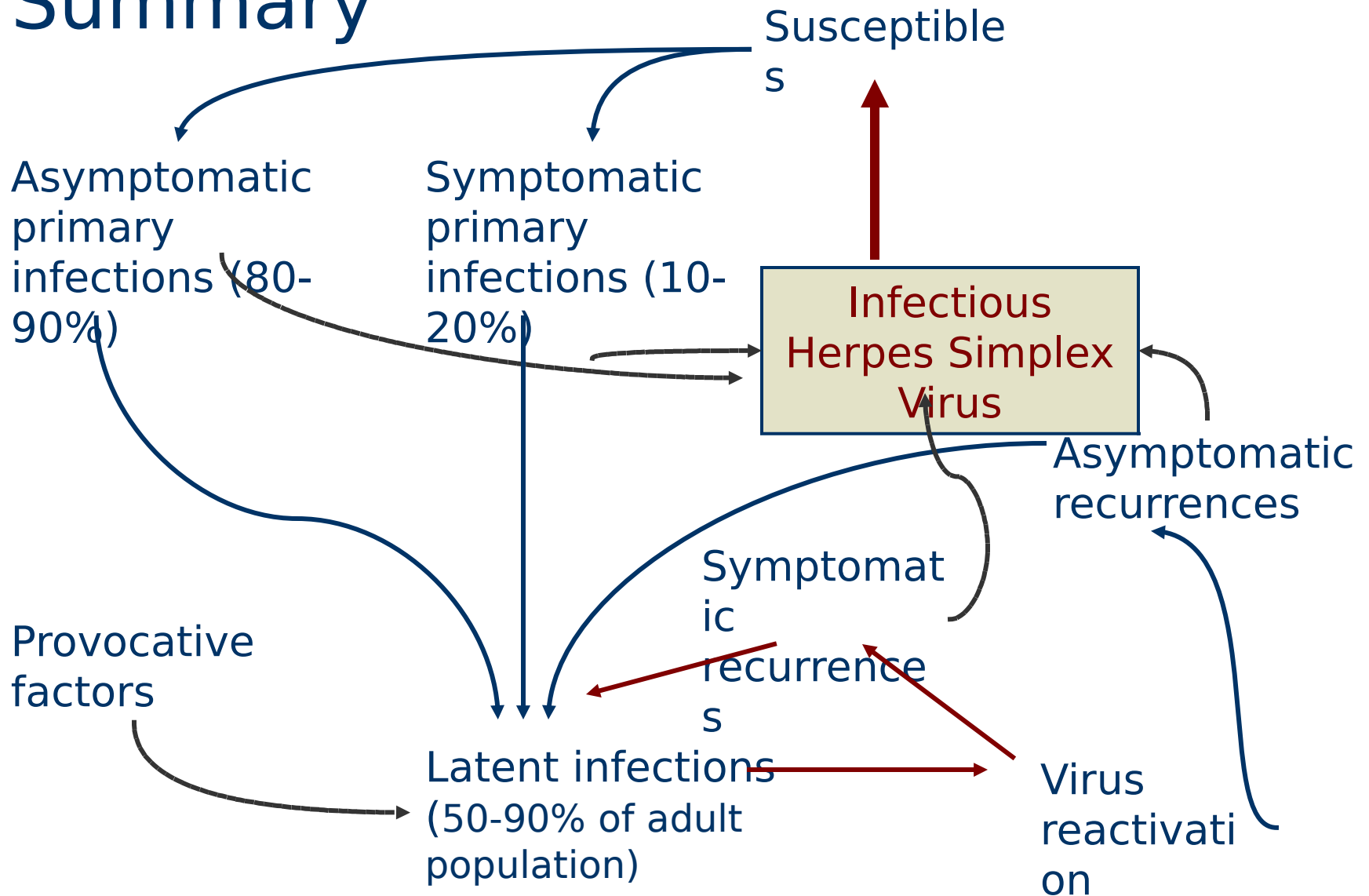


C. Synthesis in infectious virions



D. Centrifugal migration of infectious virions to epidermis

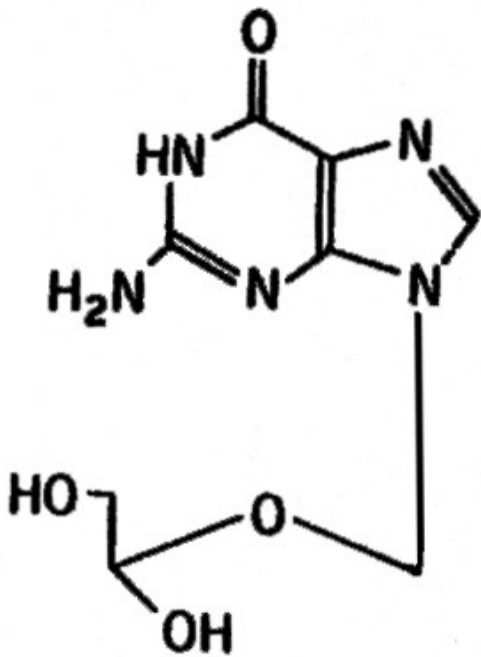
Epidemiology of Genital Herpes Summary



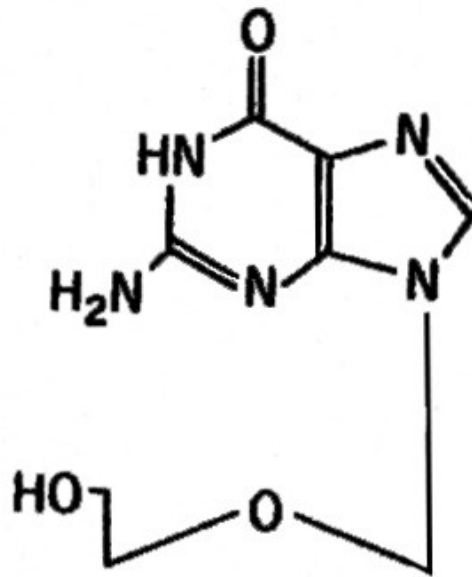
Experimental Herpes Vaccines

- ◆ Inactivated whole virus vaccines
- ◆ Attenuated virus vaccines
- ◆ Subunit vaccines
 - Virus peptides
 - *Envelope glycoproteins*

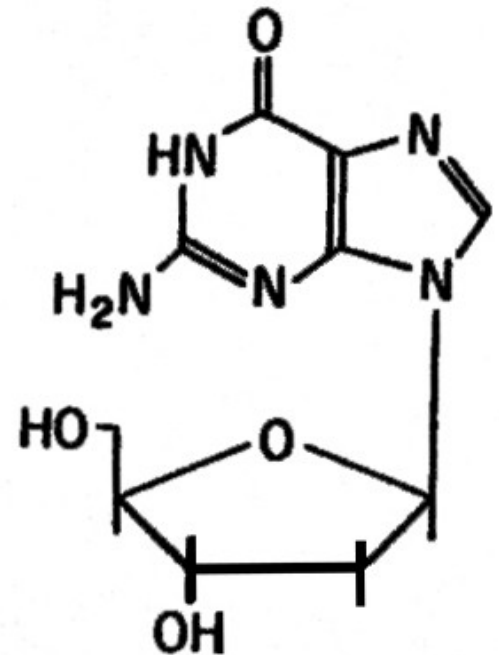
Prominent Antiviral Nucleoside Analogs



Ganciclovir
Deoxyguanosine



Acyclovir

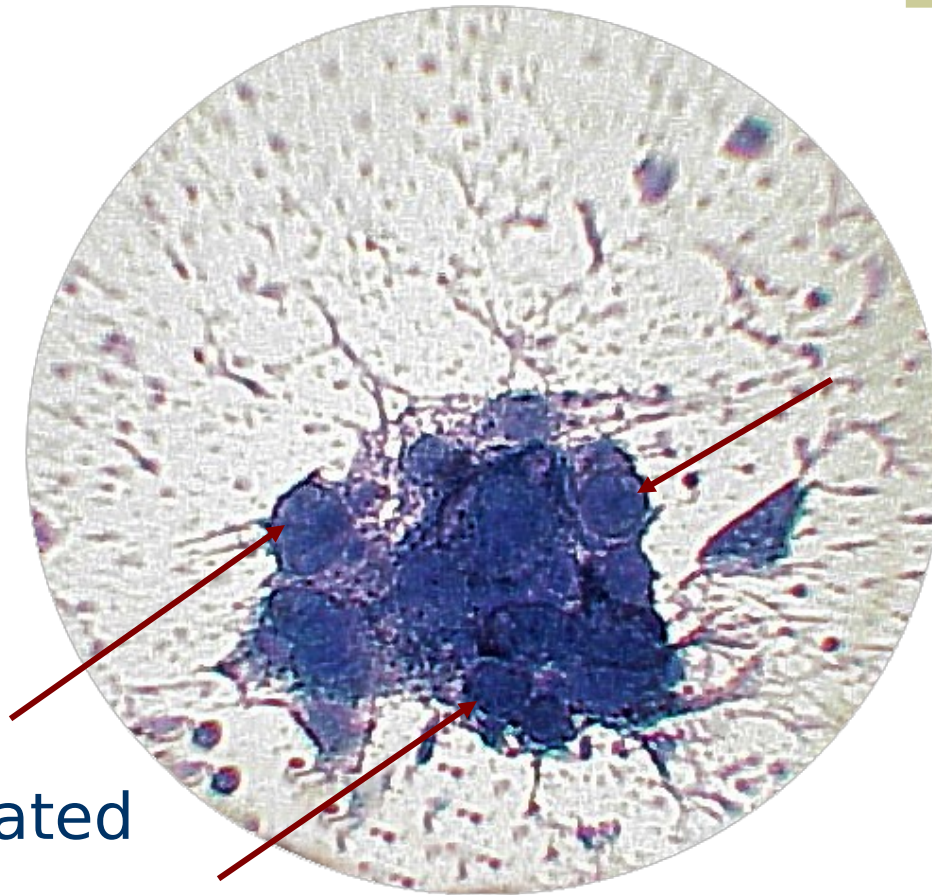


Laboratory Management of Genital Herpes

- ◆ Episodic antiviral treatment
- ◆ Suppressive therapy
- ◆ Education - counseling

Herpes Simplex Virus

Tzank
Stain
*of little
value*



Giant multi nucleated
cells

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Treatment of Genital Herpes

- ◆ Acyclovir first line drug
 - ◆ Valcyclovir
 - ◆ Famcyclovir
- For acute therapy and suppression of recurrent disease
- ◆ All Acyclovir – related drugs select resistant HSV mutants
 - ◆ None prevent or cure HSV latency

Herpes Simplex Virus

For More Information:

Cincinnati STD/HIV



Prevention Training Center

Toll Free



1-800-459-2820



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Remember: Evaluations & PIF



Please Fax to:

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Then End

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